January 1999

What's the Score and Game Plan on Teaming in Schools? *A Review of the Literature on Team Teaching and School-Based Problem-Solving Teams.*

Marshall Welch

Kerrilee Brownell

Susan M. Sheridan
University of Nebraska-Lincoln, ssheridan2@unl.edu

Published in *Remedial and Special Education, 20*:1 (January/February 1999), pp. 36–49. Published by the Hammill Institute on Disabilities and SAGE, in association with the American Rehabilitation Counseling Association. Used by permission.

Submitted August 27, 1997; revised January 7, 1998; initially accepted February 25, 1998; finally accepted April 1, 1998.

What's the Score and Game Plan on Teaming in Schools?

A Review of the Literature on Team Teaching and School-Based Problem-Solving Teams.

Marshall Welch, Kerrilee Brownell, and Susan M. Sheridan

Abstract

Articles on team teaching and school-based problem solving teams (SBPSTs) published in refereed journals from 1980 to 1997 were reviewed. The review was designed to (a) identify the types of published articles on team teaching and SBPSTs, (b) review articles on team teaching and SBPSTs published in refereed journals, (c) summarize the conclusions of published articles, (d) draw conclusions regarding the current research trends, and (e) present suggestions for continued research in teaming outcome research. This review begins with a characterization of team teaching and SBPSTs, fallowed by a description of the review process. Results indicate that most articles are anecdotal reports or technical guides for implementing both models. Results also suggest that research of both models lack experimental designs and generally report student-based outcomes. This review concludes with a discussion of the results and suggestions for continued research efforts.

Madeleine Will's (1986) call for shared responsibilities in serving students with special needs functioned as a catalyst for change in service delivery models. Similarly, the current movement toward inclusion has garnered an interest in forming an array of partnerships to promote shared responsibility. Scruggs and Mastropieri (1996) reported that, overall, general education classroom teachers embrace the historical concept of mainstreaming and the current notion of inclusion, especially when they receive adequate support from specialists. The types of school-based support and partnerships that have been utilized include assorted models of consultation and teaming involving dyads of teachers in classrooms and small groups of educators working together to solve problems. The increased interest in and practice of the various approaches are evidenced by a growing number of textbooks and articles in the professional literature describing procedures for developing and implementing partnerships (e.g., Pugach & Johnson, 1995; Thomas, Correa, & Morsink, 1995, Welch & Sheridan, 1995). This positive trend indicates that professionals from various fields of education are working together, rather than in isolated settings, to serve students with special needs or students who are at risk of academic failure. These interactions are also believed to enhance the skills of professionals as they learn from each other (Fishbaugh, 1997; Mostert, 1998).

Of the various collaborative approaches currently being implemented in schools, school-based consultation has a longer history, and, therefore, more research has been conducted on this approach. There are a variety of school-based consultation models (West & Idol, 1987). However, most can be characterized as indirect service delivery models (Curtis & Meyers, 1988; Gallessich, 1988). The configuration of consultation is triadic; a consultant indirectly provides services to a client by assisting a consultee (Tharp & Wetzel, 1969). A comprehensive review of the school-based consultation literature (Sheridan, Welch, & Orme, 1996) concluded that various models of school-based consultation were effective nearly

75% of the time and that the overall quality of the research methodology is improving. However, Sheridan et al. also reported that most of the research conducted thus far has employed indirect measures rather than student outcomes, and thus, continued research at a more rigorous level is needed.

In a like manner, we believe that it is imperative for research to document the effectiveness of other forms of school-based partnerships such as team teaching and school-based problem solving teams (SBPSTs). The literature is replete with articles on both models. However, a general profile of the literature does not presently exist. Given the existence of substantial reviews of consultation models, we have directed our attention specifically toward team teaching and SBPSTs to determine what the literature says about both of these collaborative approaches. The purposes of this article are to (a) identify the types of published articles regarding team teaching and SBPSTs, (b) review articles on team teaching and SBPSTs published in refereed journals, (c) summarize the conclusions of published articles, (d) draw conclusions regarding the current research trends, and (e) present suggestions for continued research in teaming outcome research.

OPERATIONAL DEFINITIONS

One problem in drawing conclusions from the literature is the general confusion over the terms team and teaming, which mean different things to various practitioners and researchers across different settings. Thomas et al. (1995) defined teaming as "professional and parental sharing of information and expertise, in which two or more persons work together to meet a common goal" (p. 7). Some teams are confined to the school and school personnel, whereas others have been expanded to include families or other agencies and service providers. Some teams consist of only two or three individuals (Pugach & Johnson, 1995), whereas others constitute a larger group. Still other teams are triadic, as in the case of various consultation models. Regardless of the configuration, the term team means shared responsibility in problem solving and decision making. Within the context of schools, teaming suggests that specialists from special education, school psychology, school counseling, social work, and other related services are working together or with classroom teachers.

Team Teaching Defined

There are various terms regarding the shared responsibility and delivery of instruction in classrooms, many of which have been used synonymously. For example, Angle (1996) described an enrichment program that employed collaborative teaching. The term team teaching has been also used to describe collaboration in schools (Kluwin, Gonsher, Silver, & Samuels, 1996; Pugach & Johnson, 1995; Welch & Sheridan, 1995). Others have used the term co-teaching to describe collaborative efforts in classroom settings (Dicker & Barnett, 1996; Nowacek, 1992; Walther-Thomas, Bryant, & Land, 1996). Cook and Friend (1996) defined co-teaching as "two or more professionals delivering substantive instruction to a diverse, or blended group of students in a single space" (p. 156). They identified four key components of their definition: (a) two educators, (b) delivery of meaningful instruction, (c) diverse groups of students, and (d) common settings.

Despite the synonymous use of various terms, many forms of shared instructional delivery have been delineated. Cook and Friend (1996) described five variations of coteaching. One teaching/one assisting is a technique in which one teacher takes an instructional lead while the other moves about the room observing and assisting students when necessary. Cook and Friend noted that a potential danger of this approach is that one of the teachers may be cast in the role of aide. Station teaching involves dividing the content and physical arrangement of the room, with each teacher working with a segment of curriculum and classroom. Students then rotate from one station to the other. Parallel teaching is a process by which both teachers jointly plan the instruction but divide the class into two heterogeneous halves, each taking responsibility for working with one half of the class. Alternative teaching typically involves organizing a classroom into one small group and one large group. One teacher is then able to provide instruction in the form of preteaching, guided practice, or review to a smaller group of students. Team teaching is characterized as taking turns in leading a discussion or having the two teachers play roles in a demonstration.

Bauwens and Hourcade (1995) used the term cooperative teaching as a broad, overarching umbrella of various instructional configurations two educators might use in a classroom; these authors defined cooperative teaching as

> a restructuring of teaching procedures in which two or more educators possessing distinct sets of skills work in a co-active and coordinated fashion to jointly teach academically and behaviorally heterogeneous groups of students in educationally integrated settings, that is, in general classrooms. (p. 46)

Bauwens and Hourcade also maintained that this form of shared instruction is flexible and can be implemented in at least three ways. They described team teaching as joint planning and initial presentation of information followed by delegating specific instructional roles for various activities. For example, after introducing content, one teacher may take primary responsibility for enrichment or review activities while the other observes and monitors students' performance. A second form is complementary instruction, whereby one teacher presents content and the other teacher complements the content with "how-to" or learning strategies. Finally, supportive learning is a method in which one teacher organizes and delivers content while the other teacher develops and implements a variety of learning activities designed to reinforce, enrich, or augment understanding. The role of the support teacher may be to adapt instruction and curriculum to meet the needs of exceptional or diverse groups of learners.

The term pull-in programming has also been used within the context of two educators providing instruction in classroom settings (Gelzheiser & Meyers, 1990; Jenkins & Heinen, 1989). This approach is in direct contrast to traditional, segregated service delivery, in which students are "pulled out" of mainstream settings to receive instructional support. The rationale for this service delivery approach is to reduce the stigma that students often experience due to their removal from the classroom setting, to promote generalization of newly assimilated skills, and to foster greater collaboration between classroom teachers and specialists (Jenkins & Heinen, 1989). Pull-in programming means that a specialist is "pulled in" to a mainstream setting to provide to students direct services that would otherwise be delivered in segregated environments such as resource rooms. This constitutes the simultaneous presence of two educators in the classroom, which might appear to be team teaching. However, the degree to which the classroom teacher and specialist actually share responsibilities in the planning and delivery of instruction would determine whether they were engaged in team teaching.

After reviewing the various definitions, we identified a set of common characteristics to formulate an operational definition of team teaching. Using these commonalities, we modified Bauwens, Hourcade, and Friend' s (1989) definition of cooperative teaching. For the purpose of this review, we define team teaching as the simultaneous presence of two educators in a classroom setting who share responsibility in the development, implementation, and evaluation of direct service in the form of an instructional or behavioral intervention to a group of students with diverse needs. Consequently, for the purpose of this review we did not differentiate between the various approaches and forms described above.

School-Based Problem Solving Teams Defined

Citing various editions of Webster's dictionaries, Dettmer, Thurston, and Dyck (1993) defined teaming as shared efforts in which each member of a group has a defined contribution while subordinating personal prominence to the team. Teaming has also been defined as a group of two or more professionals and/or parents sharing information and expertise in an effort to achieve an objective (Thomas et al., 1995). Using these definitions of teaming, Welch and Sheridan (1995) described various forms of school-based problem solving teams (SBPSTs), which are designed to provide a support service network that assists individuals attempting to achieve a goal by following a systematic process. These variations include teacher assistance teams (Chalfant, Van Dusen Pysh, & Moultrie, 1979) and prereferral intervention teams (Graden, Casey, & Christenson, 1985). The former typically consists of classroom teachers, whereas the latter may include specialized personnel such as school counselors, school psychologists, social workers, and special educators. Although case management teams differ slightly in terms of composition, they appear to share some common characteristics. First, they are usually ad hoc committees that meet in addition to other instructional responsibilities. Second, the team works with an individual seeking assistance by providing indirect service and developing an intervention that is ultimately implemented by the person requesting help. Third, the team follows some type of decision-making or problem-solving format. Fourth, the group assists the individual in evaluating the effect of the intervention (Welch & Sheridan, 1995).

Another variation of SBPSTs, peer collaboration (Pugach & Johnson, 1988, 1995; Welch et al., 1990), consists of a group of two or three colleagues who assist each other by following a structured dialogue designed to promote reflective problem solving. In some respects, the dyadic structure of this model is similar to the triadic design of behavioral consultation. However, the process itself is less prescriptive as the "listener" does not necessarily take on the role of an expert consultant assisting a consultee struggling to provide services to a client. Instead, the individual seeking assistance is guided through a series of reflective, open-ended questions in order to arrive at solutions or interventions on his or her own. Consequently, this approach of school-based problem solving was included in the review.

A traditional multidisciplinary student service delivery team is composed of parents, teachers, administrators, and specialists to determine a student's eligibility for special education services and develop an Individualized Education Program (IEP) (Welch & Sheridan, 1995). Consequently, this type of school-based team is also often referred to as an IEP team. In principle, the members of the team share the responsibility not only of developing the IEP, but also of implementing it. In reality, the special educator is usually delegated as the manager of the IEP and as the primary service provider, with ancillary support from other specialists. Therefore, we have excluded this form of school-based service teams from this review.

For the purpose of this review, SBPSTs have been operationally defined as an indirect service delivery approach consisting of a group of three or more educational professionals who share the responsibility of working with a colleague or family member to develop and evaluate an action plan to address an academic or behavioral problem or to meet some other specific goal. Therefore, the members of the team may not be involved in the actual implementation of the action plan.

METHOD

The articles included in this review (see Appendix) were analyzed to identify (a) type of article, (b) school-based teaming model described/used, (c) presence of objective dependent measures to assess outcomes, (d) direction of results, (e) type of experimental design employed, (f) assessment of consumer satisfaction and social validity, (g) procedures for maintaining the integrity of the teaming process, and (h) attempts to assess generalization and/or follow-up.

Type of Design

Each article was evaluated in terms of type of research design. Empirical research (ER) articles describe an investigation or program that employed carefully controlled methodology for observation, data collection, analysis, interpretation, and generalization. This category included experimental studies using quantitative analysis in group or single-subject designs, qualitative methods such as interviews or focus groups, and descriptive research.

Experimental Group Design. In experimental group designs, a sample of participants is assigned randomly to a group (either the control group or an experimental group) to test causal hypotheses. Manipulation of treatment variable(s) determines whether the relationship is one of cause and effect (Borg & Gall, 1989). Experimental group designs focus on generalizing results of the study to broader groups of individuals (Drew, Hardman, & Hart, 1996).

Quasi-Experimental Group Design. Campbell and Stanley (1963) distinguished quasi-experimental group design from experimental group design by the limitation of random group assignment. Quasi-experimental group designs are often used when random assignment to experimental treatments is not possible because the participants of the study are members of intact groups.

Single-Subject Design. Single-subject designs utilize multiple measures to determine if there is a measurable change in the behavior of one or a small number of individuals following intervention when compared to baseline performance (Tawney & Gast, 1984). These designs use several techniques to achieve experimental control: reliable observations, repeated measurement, and detailed description of treatment and treatment effects to allow for replication.

Correlational. Correlational studies are designed to discover or clarify relationships between two or more variables. The correlation coefficient is a mathematical way of expressing the degree of relationship between two or more variables. A correlational design describes the magnitude of the relationship between two or more variables but does not determine if one variable causes the outcome (Borg & Gall, 1989).

Qualitative. Qualitative research is "multi-method in focus, involving an interpretive, naturalistic approach to its subject matter" (Denzin & Lincoln, 1994, p. 2). As such, qualitative methodology is a process in which conditions that already exist are observed, analyzed, and described (Drew et al., 1996). This methodology typically utilizes several different types of data collection procedures, such as (a) interviews, (b) direct observations, (c) written documents, and (d) surveys (Patton, 1990).

Case studies. We characterized case studies as a subset of qualitative studies. Case study was operationally defined in this review as an in-depth examination of an individual using qualitative methods such as observations, interviews, or surveys.

Descriptive research. For the purpose of this review, descriptive research was defined as "hypothesis formulation and testing, the analysis of the relationship between nonmanipulated variables, and the development of generalization" to other groups or settings (Best & Kahn, 1989, p. 23). Researchers observe, record, test, analyze, and interpret existing conditions that can be used to compare and contrast relationships between variables.

Type of Articles

Each article was evaluated to determine the type of presentation style.

Nonempirical Articles. We characterized articles that reported teaming experiences without employing a research question and/or an empirical methodology to collect qualitative or quantitative data as anecdotal reports (AR). These articles describe a teaming approach, but they do not include a study question or hypothesis, or an analysis of nonmanipulated variables (Best & Kahn, 1989). Anecdotal reports are narratives of an experience with either teaming model.

Position Papers. Articles that presented a philosophical or policy statement regarding the implementation of team teaching or SBPSTs were categorized as position papers (PPs). Such articles typically consider the rationale for teaming approaches; many describe the characteristics or functions of a specific form of team teaching or SBPST.

Technical Guides. Finally, manuscripts that enumerated guidelines for implementing teaming approaches were characterized as technical guides (TGs). Articles in this category typically provide steps for development and execution of a teaming approach. Some TG manuscripts present descriptions of potential barriers and strategies for circumventing them.

Measures and Procedure

This review provides a summary of measures, social validity, follow-up procedures, and direction of results. The articles reporting empirical research utilized a variety of measures to assess the impact of the teaming models. The types of measures used are listed in Table 1. Some articles reported more than one type of measure, which explains discrepancies of the cumulative data presented in tables and figures. Indication of measures was not necessary for most articles characterized as technical guides, position papers, or anecdotal reports. Some articles did not explicitly state which, if any, measures were employed. It should be noted that the vast majority of the articles did not report demographic variables such as grade/ age level of students or years of experience for teachers, and thus these were not included in the discussion of results or in the tables.

Table 1.
Code Categories and Definitions Across Research Variables

Article type
- AR = anecdotal report
- ER = empirical research
- PP = position paper
- TG = technical guide

Design
- CS = case study
- Cot = correlation
- D = descriptive
- Ex = experimental
- N/A = not applicable
- QE = quasi-experimental
- QL = qualitative
- S = single subject

Measures
- CBA = curriculum-based assessment
- DO = direct observation
- G = grades/GPA
- I = interview
- IEP = IEP goals
- IO = intervention outcome
- IR = inclusion rate
- JE = journal entry
- N/A = not applicable
- NS = not specific
- O = other
- PP = pre/post scores
- PS = parent satisfaction
- R = rating scales
- RF = referral rate to special education
- S = survey
- SS = student satisfaction
- TS = team/teacher satisfaction

Social validity
- Y = yes
- N=no
- ? = unsure
- N/A = not applicable

Follow-up
- Y = yes
- N=no
- N/A = not applicable

Direction of results
- + = positive
- Mixed = both positive and negative
- – = negative
- N/A = not applicable

Social validity refers to the social and technical acceptability of goals, procedures, interventions, and outcomes (Elliott, 1988; Fawcett, 1991). In essence, participants other than program coordinators or investigators are asked through an interview or survey to assess the impact of a given procedure (Schwartz & Baer, 1991). Social validity was generally not applicable to position papers or technical guides. Follow-up procedures were characterized as any attempt by the authors or investigators to assess the extent to which the model or interventions were continued following initial implementation. Direction of results refers to outcomes that were positive or negative within the context of achieving a specific goal or objective. In some articles, directions of results were mixed or not applicable, as in the case of position papers or technical guides.

Selection Criteria of Articles

Selection of articles for this review was based on the definitions of team teaching and SBPSTs presented above. The search included articles published since 1980. We selected articles that (a) met our operational definitions of team teaching and school-based problem solving, (b) were conducted in school setting, (c) dealt with student-centered concerns in K-12 school settings, and (d) were published in a journal identified in the submission guidelines as refereed.

Search Procedures

The search procedures employed in this review followed those used in a previous, similar study of consultation outcomes (Sheridan et al., 1996), which in turn were based on recommendations by Cooper (1989).

Computer Searches. A search of the on-line database of Educational Resources Information Clearinghouse (ERIC) revealed 52 articles that met the search criteria. The descriptors utilized for the computer search are listed here with the number of abstracts each generated in parentheses: special education and co-teaching (17), special education and case management (22), special education and teaming (60), special education and school-based teams (6), special education and team teaching (101), special education and teacher assistance teams (3), special education and multidisciplinary team (17), and special education and consultation team (1). Other descriptors were also utilized but did not produce any citations. The discrepancy between the total and the numbers in parentheses is due to redundant finds or articles.

Hand Searches of Professionals Journals. A hand search was conducted by one of the authors by previewing all of the titles and abstracts of selected journals. Articles that appeared to meet the inclusion criteria were photocopied and read by the first author. A total of 24 journals in the fields of special education and school psychology published since 1980 were reviewed. From these, the following eight journals included article titles or abstracts on team teaching and SBPSTs: *Ex-*

ceptional Children, Journal of School Psychology, The Journal of Special Education, Journal of Educational and Psychological Consultation, Remedial and Special Education, School Psychology Review, School Psychology Quarterly, and The School Counselor.

Ancestral Search and Reviews of Literature. An ancestral search involves reviewing the reference list of collected manuscripts to identify and locate additional articles. We located four previous reviews of the school-based teaming literature (Cosden & Semmel, 1992; Lloyd, Crowley, Kohler, & Strain, 1988; Nelson, Smith, Taylor, Dodd, & Reavis, 1991; Reinhiller, 1996), which were also used to identify articles for this review. A total of 34 articles were identified through an ancestral search.

Personal Inquires. The authors contacted two colleagues at separate universities, one in special education and one is school psychology, who were believed to be conducting research in the areas of team teaching and/or SBPSTs. One article was obtained through this method.

Coding Procedures

Two authors individually reviewed each of the articles. A one-page coding form was developed and used to categorize their interpretations of each article reviewed. The coding form was based on the variables and research elements described above. A 100% agreement was achieved across the two coders in determining that 58 of the 90 (64%) articles found in the initial search met the selection criteria. Approximately half of the articles (54%) were randomly selected to be independently reviewed by two of the authors to determine interrater reliability. The initial result of the independent review was a 96% rate of agreement. There were only two articles in which there was a question as to coding responses. The same two authors convened to review the two articles in question. The final interpretation of these two articles reconciled the difference, resulting in a 100% interrater reliability.

RESULTS

Team Teaching

Forty articles on team teaching met the selection criteria and were reviewed. The results are categorized by type of article, design, measures, social validity, follow-up, and direction of results in Table 2. Some reported percentages exceed 100% because some articles fell into more than one category. A brief summary of results is provided here.

Article Type. Most of the articles were either anecdotal reports or technical guides. A total of 16 (40%) of articles employed anecdotal reporting, while another 15 (37.5%) were characterized as technical guides. Empirical research was employed with 12 (30%) of the articles reviewed. Six (15%) of the articles were considered to be position papers.

Design. A total of 23 (57.5%) articles did not employ any kind of methodological design. This is due in part to the fact that most of the articles were anecdotal reports or technical guides. Of the empirical research articles, 8 (20%) employed quasi-experimental designs. Another 7 (17.5%) of the articles were considered qualitative in design. Descriptive design was used in 5 (12.5%) of the articles. Two (5%) articles provided case studies, and only 1 (2.5%) was considered to employ an experimental design.

Measures. Due to the nature of the articles reviewed, as in the case of position papers or technical guides, types of measures were not applicable for 14 (35%) of the articles. Likewise, an additional 6 (15%) articles did not specify any type of measure used. Interviews were used for 8 (20%) of the articles, whereas surveys were employed with 5 (12.5%) articles. A total of 5 (12.5%) articles measured teacher satisfaction. Both direct observation and pre/post scores were used in 3 (7.5%) of the articles. Two (5%) articles used a combination of five different measures (inclusion rates, rating scales, journal entries, student satisfaction, and referral rate to special education). Curriculum-based assessment, Individualized Education Program (IEP) goals, and parent satisfaction were each used in 1 (2.5%) article.

Social Validity. Very few articles clearly defined social validity procedures. Of the 40 articles, only 6 (15%) explicitly reported social validity. It could be surmised that teacher satisfaction information may be construed as a form of social validity, although these articles did not explicitly state this purpose. Therefore, teacher satisfaction was not interpreted as social validation unless the authors of the article were explicit in describing it as such.

Follow-Up. Over half the articles (22; 55%) did not report implementing follow-up procedures. Follow-up procedures were employed in only 3 (7.5%) of the articles. Many of the remaining articles were characterized as position papers or technical guides. Consequently, this measure was not applicable for 15 out of 40 (37.5%) of the articles.

Direction of Results. Nineteen (47.5%) articles reported positive outcomes, while none reported negative outcomes. Due to the nature of articles such as position papers or technical guides, 16 (40%) did not report any direction of results. The remaining 5 (12.5%) articles reported mixed results.

School-Based Problem-Solving Teams

A total of 18 articles on SBPSTs met the selection criteria and thus were reviewed. The results are categorized by article type, design, measures, social validity, follow-up, and direction of results in Table 3. A brief summary of the results is provided here.

Table 2.
Team Teaching: Summary of Outcome Studies

Authors and year	Type	Design	Measures	Social validity	Follow-up	Direction of results
Adams & Cessna (1991)	TO	N/A	N/A	N/A	N/A	N/A
Adams & Cessna (1993)	AR	QL	I	N/A	N/A	+
Adamson, Cox, & Schuller (1989)	ER	QE, D	RF, IR	N	N	+
Adamson, Matthews, & Schuller (1990)	ER	QE, D	NS	N	N	+
Angle (1996)	TG	N/A	N/A	N/A	N/A	N/A
Bauwens & Hourcade (1991)	TG	N/A	N/A	N/A	N/A	N/A
Bauwens, Hourcade, & Friend (1989)	PP, ER, AR	QE, D	R, S	Y	Y	+
Bauwens & Korinek (1993)	TG, PP	N/A	N/A	N/A	N/A	N/A
Braaten, Mennes, Brown, & Samuels (1992)	AR, TG	N/A	NS	N	N	+
Brandenberger & Womack (1982)	TG	N/A	N/A	N/A	N/A	N/A
Carlson & O'Reilly (1996) A	R	N/A	NS	N	N	+
Chalmers (1993)	TG	N/A	NS	N	Y	+
Dieker & Barnett (1996)	TG, AR	N/A	N/A	N/A	N/A	N/A
Fager, Andrews, Shepherd, & Quinn (1993)	AR	N/A	NS	N	N	Mixed
Friend & Cook (1992)	AR	N/A	I	?	N	Mixed
Friend, Reising, & Cook (1993)	PP	N/A	N/A	N/A	N/A	N/A
Gable, Henrickson, Evans, Frye, & Bryant (1993)	TG	N/A	N/A	N/A	N/A	N/A
Garver & Papanla (1982)	PP, TG	N/A	N/A	N/A	N/A	N/A
Gelzheiser & Meyers (1990)	TG, AR	N/A	I, TS	Y	N	N/A
Karge, McClure, & Patton (1995)	AR	QL	R, S, TS	Y	N	+
Kluwin, Gonsher, Silver, & Samuels (1996)	AR	N/A	TS, SS, PS	?	N	+
Marshall & Herrman (1990)	ER	QE, D	DO, S	N	N	Mixed
Meyers, Gelzheiser, & Yelich (1991)	ER	QE, QL	I	N	N	+
Minke, Bear, Deemer, & Griffin (1996)	ER	QE, QL	S, TS	Y	N	+
Montgomery (1992)	AR, PP	N/A	N/A	N/A	N/A	N/A
Nolet & Tindle (1994)	TG	N/A	N/A	N/A	N/A	N/A
Nowacek (1992)	AR	N/A	I	N	N	+
Passaro, Guskey, & Zahn (1994)	AR, TG	CS	IEP	N	N	+
Patriarca & Lamb (1994)	ER	QL	I, JE, PP	N	Y	+
Pugach & Wesson (1995)	ER	QL	I	N	N	+
Reddit (1991)	ER	QL	I, DO	N	N	N/A
Roller, Rodriguez, Warner, & Lindahl (1992)	AR	N/A	NS	N	N	+
Schulte, Osborne, & McKinney (1990)	ER	Ex	S, PP	N	N	Mixed
Self, Benning, Marston, & Magnusson (1991)	AR	CS	RF, TS, CBA	Y	N	+
Stoddard, Hewitt, O'Conner, Beckner, Elder, Laporta, & Poth (1996)	AR	D	DO, JE, IR	N	N	+
Walther-Thomas, Bryant, & Land (1996)	TG	N/A	N/A	N/A	N/A	N/A
Welch & Chrisholm (1994)	ER	QE	PP	Y	N	+
Whinnery, King, Evans, & Gable (1995)	ER	QE	SS	N	N	Mixed
White & White (1992)	TG	N/A	N/A	N/A	N/A	N/A
Zeph (1991)	PP	N/A	N/A	N/A	N/A	N/A

Note: See Table 1 for code categories.

Article Type. Six (33%) articles employed empirical research. Another 6 (33%) articles were characterized as position papers. Four (22%) articles were characterized as technical guides, and 4 (22%) were categorized as anecdotal reports.

Design. Half of the articles (9,50%) did not employ any methodological de sign. Of the empirical research articles, quasi-experimental design was used in 4 (22%) of the articles, while 2 (11%) used a correlation design. A total of 2 (11%) articles employed a qualitative design, while another 2 (11%) articles used a descriptive design. Only 1 (5%) of the articles had a case study design.

Measures. Outcome measures were not applicable in 8 (44%) of the articles reviewed. Surveys were employed with 8 (44%) of the articles. Consumer satisfaction information was used with 5 (28%) of the articles. A total of 4 (22%) articles used a rating scale measurement. Both referral rate to special education and intervention outcomes were used with 3 (17%) of the articles reviewed. Interviews were employed for 2 (11%) articles, while only 1 (5.5%) article used direct observation as a form of measurement.

Social Validity. Only 5 of the 18 (28%) articles explicitly reported social validity, while 4 (22%) did not report any social validity procedures. Social validity procedures did not appear to be applicable for 8 (44%) of the articles because they were position papers or technical guides.

Follow-Up. Follow-up procedures were not applicable for almost half of the articles (8,44%) reviewed. Only 3 out 18 (17%) articles implemented follow-up procedures.

Direction of Results. Six (33%) articles reported positive outcomes, while none reported negative outcomes. The 8 (44%) position papers or technical guides did not report any direction of results. The remaining 4 (22%) articles reported mixed results. (See Table 4.)

Table 3.

School-based Problem Solving Team: Summary of Outcome Studies

Authors and year	Type	Design	Measures	Social validity	Follow-up	Direction of results
Abelson & Woodman (1983)	TO	N/A	N/A	N/A	N/A	N/A
Akasamit & Rakin (1993)	ER	QL	S	N	N	Mixed
Cosden & Semmel (1992)	PP	N/A	N/A	N/A	N/A	N/A
Chalfant & Van Dusen Pysh (1989)	ER	D	R, S, RF, IO, TS	Y	Y	+
Flugum & Reschley (1994)	ER	QE, Cor	R, S, IO	N	N	+
Graden (1989)	PP	N/A	N/A	N/A	N/A	N/A
Harrington & Gibson (1986)	ER	QE	R, S, TS	?	N	Mixed
Harris (1995)	AR	CS	I	N	N	Mixed
Hayak (1987)	PP, TG	N/A	N/A	N/A	N/A	N/A
Kruger, Struzzlero, Watts, & Vacca (1995)	ER	QE, Cor	R, S, TS	Y	N	+
Maher & Hawryluk (1983)	TG	N/A	N/A	N/A	N/A	N/A
McGlothlin (1981)	AR, TG	N/A	RF	Y	N	+
Meyers, Valentino, Meyers, Boretti, & Brent (1996)	AR	QL	DO, S, I	N	Y	Mixed
Pfeiffer (1980)	PP	N/A	N/A	N/A	N/A	N/A
Pryzwansky & Rzepski (1983)	PP	N/A	N/A	N/A	N/A	N/A
Pugach & Johnson (1995)	ER	QE	S, RF, IO, TS	Y	N	+
Thousand, Nevin-Parta, & Fox (1987)	AR	D	S, TS	Y	Y	+
Zins, Graden, & Ponti (1989)	PP	N/A	N/A	N/A	N/A	N/A

Note. See Table 1 for code categories.

Table 4.
Summary of Outcomes

Category	No. articles: Team teaching	No. articles: SBPST
Article type		
Anecdotal report	16	4
Empirical research	12	6
Position paper	6	6
Technical guide	15	4
Design		
Case study	2	1
Correlation	0	2
Descriptive	5	2
Experimental	1	0
Not applicable	23	9
Quasi-experimental	8	4
Qualitative	7	2
Single-subject	0	0
Measures		
Curriculum-based assessment	1	0
Direct observation	3	1
Grades/GPA	0	0
Interview	8	2
IEP Goals	1	0
Intervention outcome	0	3
Inclusion rate	2	0
Journal entry	2	0
Not applicable	14	8
Not specific	6	0
Other	0	0
Pre/post scores	3	0
Parent satisfaction	1	0
Rating scales	2	4
Referral rate to special education	2	3
Survey	5	8
Student satisfaction	2	0
Team/teacher satisfaction	5	5
Social validity		
Yes	6	5
No	17	4
Unsure	2	1
Not applicable	15	8
Follow-up		
Yes	3	3
No	22	7
Not applicable	15	8
Direction of results		
Positive	19	6
Mixed	5	4
Negative	0	0
Not applicable	16	8

Note: SBPST = school-based problem-solving team.

DISCUSSION

As stated in the introduction of this article, it would appear that the existing literature on teaming reflects an improving attitude on the part of teachers toward shared responsibility in the inclusion of students with disabilities. Results of this review suggest that teachers are generally reporting favorable attitudes and satisfaction with various forms of teaming. This is an important component to adopting team teaching and SBPSTs. These results also reflect social validation of collaborative partnerships. However, the results of this review also reveal that we know relatively little about student outcomes for either approach.

It is important to note that this review included articles from refereed journals only. We therefore acknowledge that it is highly unlikely that our sample included any studies with negative outcomes. The overall results of this review appear to support the observation of Fuchs and Fuchs (1996) that team teaching and problem-solving teams do not have a solid empirical database suggesting efficacy. These results also support Reinhiller's (1996) conclusions that team teaching continues to garner interest on the part of practitioners, yet the research does not appear to reflect positive student outcomes. Of the articles on team teaching, only 7 used any form of student-based outcomes. Likewise, only 6 of the 18 articles on SBPSTs utilized student measures. As a whole, the articles generally did not report student outcomes such as performance on curriculum-based assessment as methods of determining the effects of team teaching. Of the articles on team teaching, only 1 reported use of grades or GPA as a measure of outcomes, while 1 other reported use of student scores on pre- and postintervention measures.

The criteria used to assess the impact of both models were generally nebulous and consistently teacher centered. Outcome information was generally positive but typically limited to teacher satisfaction or teacher testimonials. Although it is important to assess teachers' reactions to team teaching, it is equally important to employ some type of student-based measure to determine the effectiveness of their efforts. Based on the results of this review, it is difficult to surmise whether team teaching has an impact on student performance. In sum, the bulk of the literature on team teaching represents technical guides for planning and implementation. This information is useful for practitioners considering a form of team teaching. However, many of these articles do not provide information regarding the number of students with special needs in a team-teaching setting or how students were identified. Similarly, logistical information such as how much time was spent planning and implementing team teaching was not typically provided. Finally, articles did not usually report important demographic and setting factors such as age/grade levels of students or teachers' years of experience.

Results on SBPSTs were generally gleaned from self-reports from surveys and interviews of team members' perceived satisfaction rather than intervention outcomes. As in

the case of team teaching, it is critical to assess student outcomes for SBPSTs rather than merely utilizing self-reports of team member satisfaction, as is evident in this review. Furthermore, logistical detail and formative evaluation data were not usually provided. It is unclear how these teams were formed, when they met, for how long, and for what reasons.

The results of this review reveal a lack of experimental designs in studies for both models. Of the team-teaching articles, only 1 employed an experimental design and only 5 used quasi-experimental designs. Likewise, less than 25% of the articles on SBPSTs were experimental or quasiexperimental. Again, the majority of the articles reviewed were technical guides, anecdotal reports, or position papers.

A "Game Plan" and Recommendations for Future Research on Teaming

Although this review provided valuable information regarding the current research literature, a number of questions have been generated. These questions serve as appropriate vehicles for continued research. Clearly, the most important question generated is, What are student outcomes for both models? Continued research is necessary to determine the extent to which team teaching and SBPSTs are effective in facilitating meaningful change in student behavior and performance. The literature is replete with technical guides, but the role of preparation in effective implementation is still unclear. Therefore, another question concerns the type and amount of training practitioners receive prior to implementing either model.

Given the variations of both models, it is difficult to discern which approach of team-teaching or problem-solving teams is employed. Consequently, researchers must ask what specific form or model of SBPSTs or team teaching is used. Likewise, it is important to explore the extent to which the integrity of the models' procedures is maintained. How much time is allocated and spent for planning and implementation? Technical guides do not appear to provide enough logistical information regarding time requirements for planning and implementation or enough information to help teachers identify which and how many students might benefit from teaching. Thus, additional questions include the following: (a) How many students with special needs can be reasonably served by two educators in a mainstream setting? (b) How are students selected and placed in team-teaching settings? (c) Are there specific segments of the student population with special needs who would benefit from team teaching, and, if so, who are they? (d) How much collaboration is actually practiced and in what circumstances? (e) What roles are delegated and how were they determined? (f) How are grading procedures determined and implemented? and (g) Are there differences in development, implementation, and outcomes between elementary and secondary settings? These questions can only be answered through continued research.

While recognizing the need for continued research, we also acknowledge the challenges associated with applied research in authentic settings, especially for practitioners. Experimental research is important and necessary, but practitioners are primarily concerned with, and interested in, knowing if an intervention will work within the realistic context and confines of a classroom. Controlled experiments conducted by outside researchers often create artificial environments (Drew & Hardman, 1985). Artificiality of experimental research may not promote generalizability to natural settings (Kerlinger, 1979). Clinical research, like experimental research, can neither prove nor confirm a theory (Campbell & Stanley, 1963). Consequently, it is appropriate to conceptualize a bulk of this type of study as action research. Action research bridges traditional theory-practice and knowledge-action gaps as practitioners follow research methods (Noffke, 1997). Therefore, we have taken considerable effort to recommend viable yet empirically sound approaches for future research. We have outlined suggestions for summative and formative evaluation procedures. Most of the recommendations presented here are quasi-experimental in nature, taking into account that research in authentic settings often does not have the luxury of random samples. As such, it is our hope that state and district-level administrators will consider these suggestions and facilitate applied research by practitioners. This will enable administrators to make sound policy decisions regarding these collaborative forms of service delivery. The publication of these results in refereed journals will also make a significant contribution to the existing research literature.

Summative Evaluation Procedures

Practitioners should begin their investigations by developing a research question that can be answered using observable and measurable data. Measures prior to and following team teaching provide useful performance information when they are used to contrast performance in a comparable group of students that did not receive team teaching. The pre- and postintervention measures should be far enough apart to minimize the possibility of practice effects. Student performance using descriptive quantitative statistics can be obtained through the use of pre- and post-team-teaching performance scores on curriculum-based assessment instruments in a given academic area such as math, written language, or reading. Daily or weekly skill probes can provide ongoing data on student performance.

SBPSTs can assess the intervention by reviewing the extent to which they met stated objectives. Collaborative problem-solving procedures include developing measurable objective statements consisting of a behavior, conditions, criteria, and duration (Welch & Sheridan, 1995). A major function of SBPSTs is to reduce the number of unnecessary or inappropriate student referrals to special education programs (Chalfant & Van Dusen Pysh, 1989; Zins, Curtis, Graden, & Ponti, 1988). Therefore, another outcome measure is determining referral rates to special education. It could be surmised that a reduced number of referrals reflects successful intervention.

Finally, teams can utilize a satisfaction survey to assess the degree to which the individual requesting assistance from the team was satisfied with the overall process and outcomes.

Qualitative methods should also be considered to gather attitudinal and affective information. Simple satisfaction surveys on team teaching can be completed by both teachers as well as by the students and their parents. Social validity can be enhanced through the use of interviews or focus-group discussions. This approach can also be used by problem-solving team members and those individuals requesting assistance.

Single-Subject Methodology. We found no articles for either teaming model that employed single-subject methodology to assess student outcomes. Single-subject methodology (Tawney & Gast, 1984) may be a viable approach to consider for obtaining student outcome information in both team teaching and SBPSTs. This methodology has traditionally been utilized in self-contained special education settings with students who have severe special needs, although it can also be used in other settings with a full range of student ability (Gibb, 1994). A multiple baseline design either across participants or across skill/tasks would be effective in assessing student outcomes. Teachers and/or instructional assistants can collect data daily or even weekly using data collection techniques, which would provide an ongoing picture of the students' performance in team-teaching situations. Likewise, behavioral interventions developed by an SBPST can be assessed through single-subject methodology by observing student behaviors. An example of such procedures is provided in Galloway and Sheridan (1994).

Formative Evaluation Procedures

It is important to assess the function and procedures of team teaching and SBPSTs through formative evaluation procedures. In other words, it is critical to determine if either of these models is efficient in terms of a cost-benefit ratio. This process does not necessarily have to be a time-consuming operation and can be accomplished by maintaining simple daily or weekly logs or journals. Teachers involved in team teaching should record how often and how much time is spent in planning. Likewise, the log should briefly describe the nature of shared responsibility in planning activities. The journals should also include a daily checklist or means of recording roles teachers took during team teaching. For example, a simple check-mark in a column might indicate if one teacher took the primary role or lead during lessons while the other teacher played a supporting role. The checklist might also include recording which teacher was responsible for grading and evaluation procedures as well as for which group of students. Teachers should also record what decision-making procedures, if any, were used to identify and select students with special needs to be included in a team-teaching setting. Similarly, the number of students with special needs in the team-teaching environment should be recorded to help determine an appropriate ratio of typical and atypical students in team teaching. Likewise, it is important to indicate the nature of students' needs and their disability category.

Logs and checklists can also be used in formative evaluation of SBPSTs. These records will assist teams in assessing how much time is spent in planning, coordination, meeting times, and follow-up. Records such as requests for assistance forms can assist in tracking the efficiency of the team's efforts from initial request to completion of an intervention (Welch & Sheridan, 1995).

Another component of formative evaluation is assessing the extent to which a problem-solving team maintains the integrity of procedures. Regardless of the form or constitution of problem-solving teams, a generic set of problem-solving steps should be followed. These steps include (a) problem identification, (b) generation of alternative solutions, (c) decision making, (d) implementation of the solution, and (e) evaluation of the outcomes (Jayanthi & Friend, 1992; Welch & Sheridan, 1995). However, as one study indicated (Meyers, Valentino, Meyers, Boretti, & Brent, 1996), many teams experience difficulty in completing specific steps, such as problem identification or goal statements, or following the chronological process of problem solving. Assessing procedural efficiency and integrity could be accomplished by audio- or videotaping the team in action, to be reviewed by an independent party who could then provide constructive feedback. Another technique is through direct observation of the team meeting.

Training Issues

Although educators may philosophically embrace collaboration in the form of team teaching or problem-solving teams, many have not received adequate training. Some participants of team teaching or SBPSTs may be "making it up as they go." This would probably have an impact on the efficacy and outcomes of either model. Consequently, it is equally important to determine if participants in either model have actually received training. Authors of technical reports and research articles should report whether training was provided as well as giving a description of the process, including its duration. It would also appear that both forms of collaborative partnerships are becoming an expected component of educators' roles and responsibilities. Thus it is incumbent upon professional preparation programs to include team teaching and/or problem-solving teams in coursework and field experiences.

CONCLUSIONS

Apart from consultation models, empirical support for collaborative partnerships in service delivery to students with special needs such as team teaching and problem-solving teams has not kept pace with their implementation. There is a continued impetus for collaboration, yet practitioners and researchers have not made, or cannot make, empirically based claims that their teaming efforts have been effective in terms

of student outcomes. In essence, the existing teaming literature merely describes teacher satisfaction or changes in attitudes. Although this is a critical initial step, it is equally important to report changes in student performance as a result of collaborative efforts. Likewise, researchers must endeavor to empirically assess the efficacy of collaborative efforts. The literature must also provide a clear picture of the entire process of development, implementation, and evaluation of these forms of educational partnerships. Recognizing the need for continued research, we have provided a list of suggestions for practitioners and researchers to consider.

◄ ►

Marshall Welch, PhD, is an associate professor and coordinator of the teacher education program in the area of mild to moderate disabilities in the Department of Special Education at the University of Utah.

Kerrilee Brownell, MS, is a doctoral candidate studying the use of technology in teacher education in the Department of Special Education at the University of Utah.

Susan M. Sheridan, PhD, is a professor in the Department of Educational Psychology at the University of Utah.

References

Angle, B. (1996). Five steps to collaborative teaching and enrichment remediation. *Teaching Exceptional Children, 29*(1), 8-10.

Bauwens, J., & Hourcade, J. J., (1995). *Cooperative teaching: Rebuilding the schoolhouse for all students.* Austin, TX: PRO-ED.

Bauwens, J., Hourcade, J. J., & Friend, M. (1989). Cooperative teaching: A model for general and special education integration. *Remedial and Special Education, 10,* 17-22.

Best, J. W., & Kahn, J. V. (1989). *Research in education* (6th ed.). Englewood Cliffs, NJ: Prentice Hail.

Borg, W. R., & Gall, M. D. (1989). *Educational research: An introduction* (5th ed.). White Plains, NY: Longman.

Campbell, D. T., & Stanley, J. C. (1963). *Experimental and quasiexperimental designs for research. Boston*: Houghton Mifflin.

Chalfant, J. C., & Van Dusen Pysh, M. V. (1989). Teacher assistance teams: A descriptive study on 96 teams. *Remedial and Special Education, 10,* 49-58.

Chalfant, J. C., Van Dusen Pysh, M. V., & Moultrie, R. (1979). Teacher assistance teams: A model for within building problem solving. *Learning Disability Quarterly, 2,* 85-95.

Cook, L., & Friend, M. (1996). Co-teaching: Guidelines for creating effective practices. In E. L. Meyen, G. A. Vergason, & R. J. Whelan (Eds.), *Strategies for teaching exceptional children in inclusive settings* (pp. 155-182). Denver: Love.

Cooper, H. M. (1989). *Integrating research: A guide for literature reviews* (2nd ed.), Newbury Park, CA: Sage.

Cosden, M. A., & Semmel, M. I. (1992). Teacher assistance teams: A conceptual and empirical review. *Special Services in the Schools, 6,* 5-25.

Curtis, M. J., & Meyers, J. (1988). Consultation: A foundation for alternative services in the schools. In J. L. Graden, J. E. Zins, & M. J. Curtis (Eds.), *Alternative educational delivery, systems: Enhancing options for all students* (pp. 35-48). Washington, DC: National Association of School Psychologists.

Denzin, N. K., & Lincoln, Y. S. (1994). *Handbook of qualitative research.* Thousand Oaks, CA: Sage.

Dettmer, P., Thurston, L. P., & Dyck, N. (1993). *Consultation, collaboration, and teamwork for students with special needs.* Boston: Allyn & Bacon.

Dieker, L. A., & Barnett, C. A. (1996). Effective co-teaching. *Teaching Exceptional Children, 29(*1), 5-7.

Drew, C. J., & Hardman, M. L. (1985). *Designing and conducting behavioral research.* New York: Pergamon.

Drew, C. J., Hardman, M. L., & Hart, A. W. (1996). *Designing and conducting research: Inquiry in education and social science* (2nd ed.). Needham Heights, MA: Allyn & Bacon.

Elliott, S. N. (1988). Acceptability of behavioral treatments in educational settings. In J. C. Witt, S. N. Elliott, & F. M. Gresham (Eds.), *Handbook of behavior therapy in education* (pp. 121-150). New York: Plenum.

Fawcett, S. B. (1991). Social validity: A note on methodology. *Journal of Applied Behavior Analysis, 24,* 235-239.

Fishbaugh, M. S. E. (1997). *Models of collaboration.* Boston: Allyn & Bacon.

Fuchs, D., & Fuchs, L. S. (1996). Consultation as a technology and the politics of school reform. *Remedial and Special Education, 17,* 386-392.

Gallessich, J. (1988). *The profession and practice of consultation.* San Francisco: Jossey- Bass.

Galloway, J., & Sheridan, S. M. (1994). Implementing scientific practices through case studies: Examples using home-school interventions and consultation. *Journal of School Psychology, 32,* 385-413.

Gelzheiser, L. M., & Meyers, J, (1990). Special and remedial education in the classroom: Theme and variations. *Journal of Reading, Writing, & Learning Disabilities, 6,* 419-436.

Gibb, G. S. (1994). *The effects of teacher only and teacher/paraprofessional flash card drill on student acquisition of multiplication facts.* Unpublished doctoral dissertation, University of Utah, Salt Lake City.

Graden, J. L., Casey, A., & Christenson, S. L. (1985). Implementing a prereferral intervention system Part II: The data. *Exceptional Children, 51,* 487-496.

Jayanthi, M., & Friend, M. (1992). Interpersonal problem solving: A selective literature review to guide practice. *Journal of Educational and Psychological Consultation, 3*, 39-53.

Jenkins, J. R., & Heinen, A. (1989). Students' preference for service delivery: Pull-out, in-class, or integrated models. *Exceptional Children, 55,* 516-523.

Kerlinger, F. N. (1979). *Behavioral research: A conceptual approach.* New York: Holt, Rinehart & Winston.

Kluwin, T. N., Gonsher, W., Silver, K., & Samuels, J. (1996). The E.T. class: Education together-Team teaching hearing impaired and hearing students together. *Teaching Exceptional Children, 29*(1), 11-15.

Lloyd, J. W., Crowley, E. P., Kohler, F. W., & Strain, P. S. (1988). Redefining the applied research agenda: Cooperative learning, prereferral, teacher consultation, and peer-mediated interventions. *Journal of Learning Disabilities, 21,* 43-51.

Meyers, B., Valentino, C. T., Meyers, J., Boretti, M., & Brent, D. (1996). Implementing prereferral intervention teams as an approach to school-based consultation in an urban school system. *Journal of Educational and Psychological Consultation, 7,* 119-149.

Mostert, M. P. (1988). *Interprofessional collaboration in schools.* Boston: Allyn & Bacon.

Nelson, R. J., Smith, D. J., Taylor, L., Dodd, J. M., & Reavis, K. (1991). Prereferral intervention: A review of the research. *Education and Treatment of Children, 14,* 243-253.

Noffke, S. E. (1997). Professional, personal, and political dimensions of action research. *Review of Research in Education, 22,* 305-343.

Nowacek, E. J. (1992). Professionals talk about teaching together: Interviews with five collaborating teachers. *Intervention In School and Clinic, 27,* 262-276.

Patton, M. Q. (1990). *Qualitative evaluation and research methods* (2nd ed.). Newbury Park, CA: Sage.

Pugach, M. C., & Johnson, L. J. (1988). Peer collaboration. *Teaching Exceptional Children, 20*(1), 75-77.

Pugach, M. C., & Johnson, L. J. (1995). Unlocking expertise among classroom teachers through structured dialogue: Extending research on peer collaboration. *Exceptional Children, 62, 101*-110.

Reinhiller, N. (1996). Coteaching: New variations on a not-so-new practice. *Teacher Education and Special Education, 19,* 34-38.

Schwartz, I. S, & Baer, D. M. (1991). Social validity assessments: Is current practice state of the art? *Journal of Applied Behavior Analysis, 24,* 189-204.

Scruggs, T. E., & Mastropieri, M. A. (1996). Teacher perceptions of mainstreaming/inclusion, 1958-1995: A research synthesis. *Exceptional Children, 63,* 59-74.

Sheridan, S. M., Welch, M., & Orme, S. F. (1996). Is consultation effective? A review of outcome research. *Remedial and Special Education, 17,* 341-354.

Tawney, J. W., & Gast, D. L. (1984). *Single subject research in special education.* Columbus, OH: Merrill.

Tharp, R. G., & Wetzel, R. J. (1969). *Behavioral modification in the natural environment.* New York: Academic Press.

Thomas, C. C., Correa, V. I., & Morsink, C. V. (1995). *Interactive teaming: Consultation and collaboration in special programs (*2nd ed.). Englewood Cliffs, NJ: Prentice Hall.

Walther-Thomas, C., Bryant, M., & Land, S. (1996). Planning for effective co-teaching: The key to successful inclusion. *Remedial and Special Education, 17,* 255-265.

Welch, M., Judge, T., Anderson, J., Bray, J., Child, B., & Franke, L. (1990). The collaborative options-outcome planner: A tool for implementing pre-referral consultation. *Teaching Exceptional Children, 22*(2), 30-31.

Welch, M., & Sheridan, S. M. (1995). *Educational partnerships: Serving students at risk.* Ft. Worth, TX: Harcourt Brace.

West, J. F., & Idol, L. (1987). School consultation (Part I): An interdisciplinary perspective on theory, models, and research. *Journal of Learning Disabilities, 20,* 388-408.

Will, M. (1986). Educating students with learning problems: A shared responsibility. *Exceptional Children, 52,* 411-416.

Zins, J. E., Curtis, M. J., Graden, J. L., & Ponti, C. R. (1988). *Helping students succeed in the regular classroom.* San Francisco: Jossey Bass.

APPENDIX: ARTICLES REVIEWED

Abelson, M. A., & Woodman, R. W. (1983). Review of research on team effectiveness: Implications for teams in schools. *School Psychology Review, 12,* 125-136.

Adams, L., & Cessna, K. (1991). Designing systems to facilitate collaboration: Collective wisdom from Colorado. *Preventing School Failure, 35*(4), 37-42.

Adams, L., & Cessna, K. (1993). Metaphors of the co-taught classroom. *Preventing School Failure, 37*(4), 28-31.

Adamson, D. R., Cox, J., & Schuller, J. (1989). Collaboration/consultation: Bridging the gap from the resource room to regular classroom. *Teaching Education and Special Education, 12,* 52-55.

Adamson, D. R,, Mathews, P., & Schuller, J. (1990). Five ways to bridge the gap from the resource room to regular classroom. *Teaching Exceptional Children, 22*(2), 74-77.

Akasamit, D. L., & Rankin, J. L. (1993). Problem-solving teams as a prereferral process. *Special Services in the Schools, 17*(1), 1-22.

Angle, B. (1996). Five steps to collaborative teaching and enrichment remediation. *Teaching Exceptional Children, 29*(1), 8-10.

Bauwens, J., & Hourcade, J. J. (1991). Making co-teaching a mainstreaming strategy. *Preventing School Failure, 35*(4), 19-24.

Bauwens, J., Hourcade, J. J., & Friend, M. (1989). Cooperative teaching: A model for general and special education integration. *Remedial and Special Education, 10,* 17-22.

Bauwens, J., & Korinek, L. (1993). IEPs for cooperative teaching: Developing legal and useful documents. *Intervention in School and Clinic, 28,* 303-306.

Braaten, B., Mennes, D., Brown, M., & Samuels, H. (1992). A model of collaborative service for middle school students. *Preventing School Failure, 36*(3), 10-15.

Brandenberger, J., & Womack, S. T. (1982). Division of labor in a special team teaching situation. *Clearinghouse, 55,* 229-230.

Carlson, E., & O'Reilly, F. E. (1996). Integrating Title I and special education service delivery. *Remedial and Special Education, 17,* 21-29.

Chalfant, J. C., & Van Dusen Pysh, M. (1989). Teacher assistance teams: Five descriptive studies on 96 teams. *Remedial and Special Education, 10,* 49-58.

Chalmers, L. (1993). Successful inclusion in rural school settings: How one rural Minnesota school district made it work. *Rural Educator, 14*(3), 31-31.

Cosden, M. A., & Semmel, M. I. (1992). Teacher assistance teams: A conceptual and empirical review. *Special Services in the Schools, 6*(3 & 4), 5-25.

Dicker, L. A., & Barnett, C. A. (1996). Effective co-teaching. *Teaching Exceptional Children, 29*(1), 5-7.

Fager, P., Andrews, T., Shepherd, M. J., & Quinn, E. (1993). *Teacher Education and Special Education, 16,* 51-59.

Flugum, K. R., & Reschley, D. J. (1994). Prereferral interventions: Quality indices and outcomes. *Journal of School Psychology, 32,* 1-14.

Friend, M., & Cook, L. (1992). The new mainstreaming. *Instructor, 101*(7), 30-36.

Friend, M., Reising, M., & Cook, L. (1993). Co-teaching: An overview of the past, a glimpse at the present, and considerations for the future. *Preventing School Failure, 37*(4), 6-10.

Gable, R. A., Henrickson, J. M., Evans, S. S., Frye, B., & Bryant,

K.(1993). Cooperative planning for regular classroom instruction of students with disabilities. *Preventing School Failure, 37*(4), 16-20.

Garver, A., & Papanla, A. (1982). Team teaching: It works for the student. *Academic Therapy, 18, 191*-196.

Gelzheiser, L. M., & Meyers, J. (1990). Special and remedial education in the classroom: Theme and variations. *Journal of Reading, Writing, and Learning Disabilities, 6*, 419-436.

Graden, J. L. (1989). Redefining "prereferral intervention" as intervention assistance: Collaboration between general and special education. *Exceptional Children, 56,* 227-231.

Harrington, R. G., & Gibson, E. (1986). Preassessment procedures for learning disabled children: Are they effective? *Journal of Learning Disabilities, 19,* 538-541.

Harris, K. C. (1995). School-based bilingual special education teacher assistance teams. *Remedial and Special Education, 16,* 337-343.

Hayek, R. A. (1987). The teacher assistance team: A pre-referral support system. *Focus on Exceptional Children, 20*(1), 1-8.

Karge, B. D., McClure, M., & Patton, P. L. (1995). The success of collaboration resource programs for students with disabilities in grades 6 through 8. *Remedial and Special Education, 16, 79*-89.

Kluwin, T. N., Gonsher, W., Silver, K., & Samuels, J. (1996).The E.T. class: Education together-Team teaching hearing impaired and hearing students together. *Teaching Exceptional Children. 29(*1), 11-15.

Kruger, L. J., Struzziero, J., Watts, R., & Vacca, D. (1995). The relationship between organizational support and satisfaction with teacher assistance teams. *Remedial and Special Education, 16,* 203-211.

Maher, C. A., & Hawryluk, M. K. (1983). Framework and guidelines for utilization of teams in schools. *School Psychology Review, 12,* 180-185.

Marshall, K. J., & Herrmann, B. A. (1990). A collaborative rectacognitive training model for special education and regular education teachers. *Teacher Education and Special Education, 13,* 96-104.

McGlothlin, J. E. (1981). The school consultation committee: An approach to implementing a teacher consultation model. *Behavioral Disorders, 6,* 101-107.

Meyers, B., Valentino, C. T., Meyers, J., Boretti, M., & Brent, D. (1996). Implementing prereferral intervention teams as an approach to school-based consultation in an urban school system. *Journal of Educational and Psychological Consultation, 7,* 119-149.

Meyers, J., Gelzheiser, L. M., & Yelieh, G. (1991). Do pull-in programs foster teacher collaboration? *Remedial and Special Education, 12,* 7-15.

Minke, K. M,, Bear, G. G., Deemer, S. A,, & Griffin, S. M. (1996). Teachers' experiences with inclusive classrooms: Implications for special education reform. *The Journal of Special Education, 30,* 153-186.

Montgomery, J. K. (1992). Clinical forum: Implementing collaborative consultation perspectives from the field: Language, speech, and heating services in schools. *Language, Speech, and Hearing Services in Schools, 23,* 363-364.

Nolet, V., & Tindel, G. (1994). Curriculum-based collaboration. *Focus on Exceptional Children, 27*(3), 1-12.

Nowacek, J. (1992). Professionals talk about teaching together: Interviews with five collaborating teachers. *Intervention in School and Clinic, 27,* 262-276.

Passaro, P. D., Guskey, T. R., & Zahn, G. (1994). Using mastery of learning to facilitate the full inclusion of students with the most intense educational needs within rural schools. *Rural Special Education Quarterly, 13*(3), 31-39.

Patriarca, L. A., & Lamb, M. A. (1994). Collaboration, curriculum development and reflection as frameworks for exploring the integration of general and special education. *B.C. Journal of Special Education, 18,* 95-100.

Pfeiffer, S. I. (1980). The school-based interprofessional team: Recurring problems and some possible solutions. *Journal of School Psychology, 18,* 388-394.

Pryzwansky, W. B., & Rzepski, B. (1983). School-based teams: An untapped resource for consultation and technical assistance. *School Psychology Review, 12,* 174-179.

Pugach, M. C., & Johnson, L. J. (1995). Unlocking expertise among classroom teachers through structured dialogue: Extending research on peer collaboration. *Exceptional Children, 62,* 101-110.

Pugach, M. C., & Wesson, C. (1995). Teachers' and students' views of team teaching of general education and learning-disabled students in two fifth-grade classes. *Elementary School Journal, 95,* 279-295.

Redditt, S. (1991). Two teachers working as one: Co-teaching for special/regular education integration. *Equity and Choice, 8,* 49-56.

Roller, E., Rodriquez, T., Warner, J., & Lindahl, P. (1992). Clinical forum: Implementing collaborative consultation integration of self-contained children with severe speech-language needs into the regular education classroom. *Language, Speech, and Hearing Services in Schools, 23,* 365-366.

Schulte, A. C., Osborne, S. S., & McKinney, J. D. (1990). Academic outcomes for students with learning disabilities in consultation and resource programs. *Exceptional Children, 57,* 162-172.

Self, H., Benning, A., Marston, D., & Magnusson, D. (1991). Cooperative teaching project: A model for students at risk. *Exceptional Children, 58,* 26-34.

Stoddard, K., Hewitt, M., O'Connor, D., Beckner, J., Elder, M., Laporta, C., & Poth, J. (1996). Inclusive practices through teacher research. *Remedial and Special Education, 17*, 237-244.

Thousand, J., Nevin-Parta, A., & Fox, W. L. (1987). In-service training to support the education of learners with severe handicaps in their local public schools. *Teacher Education and Special Education, 10,* 4-13.

Walther-Thomas, C., Bryant, M., & Land, S. (1996). Planning for effective co-teaching: The key to successful inclusion. *Remedial and Special Education, 17,* 255-265.

Welch, M., & Chisholm, K. (1994). Action research as a tool for preparing specialists to use strategic interventions in educational partnerships. *Teacher Education and Special Education, 17,* 269-279.

Whinnery, K., King, M., Evans, W. H., & Gable, R. A. (1995). Perceptions of students with learning disabilities: Inclusion versus pull-out services. *Preventing School Failure, 40*(1), 5-9.

White, A. E., & White, L. L. (1992). A collaborative model for students with mild disabilities in middle schools. *Focus on Exceptional Children, 24*(9), 1-10.

Zeph, L. A. (1991). Considering regular classroom options for students with severe disabilities in rural areas. *Rural Special Education Quarterly, 10*(4), 5-9.

Zins, J. E., Graden, J. L., & Ponti, C. R. (1988). Prereferral interventions to improve special services delivery. *Special Services in the Schools, 4,* 109-130.